Greenbaum Rowe Smith & Davis LLP
COUNSELORS AT LAW

The Financial Benefits of Green Building

An Interview with Jennifer Senick, Executive Director of the Rutgers Center for Green Building
by Meryl A.G. Gonchar and Senwan H. Akhtar

Jennifer Senick, Exec. Dir.
Rutgers Center for Green Building

Meryl A.G. Gonchar, Esq.
Greenbaum, Rowe, Smith & Davis LLP

Senwan H. Akhtar, Esq., LEED AP
Greenbaum, Rowe, Smith & Davis LLP

On May 3, 2011, Jennifer Senick was a keynote at our Fifth Annual Real Estate Conference where she addressed the financial and operational benefits of sustainable or green construction in the built and new project environments. Here, Meryl Gonchar, Co-Chair of GRSD's Real Estate Department, and Senwan Akhtar, an attorney in the Real Estate and Corporate Departments and LEED-AP, interview Ms. Senick on the major points of her presentation and work.

1. What are the major financial benefits for building green for new construction in the residential, commercial, and industrial sectors?

Key financial benefits of new green construction generally relate to lower operational costs, and may include lower energy, waste and water costs, lower maintenance costs, and increased productivity and health. The latter, while difficult to measure/prove, have come to be regarded as the holy grail of green building given that labor costs for most businesses comprise the overwhelming majority of costs. Building green also presents opportunities for incentives to offset any higher initial (capital) costs and may result in increased occupancy rates and rental rates, insurance discounts and higher property value. While the data remains thin on these potential benefits, they have generated much interest among real estate companies. New green building valuation tools and metrics -- such as the Green Building Underwriting Standards -- should help to standardize this financial data, providing better opportunity for analysis and attainment of these benefits. The Green Building Underwriting Standards were completed by the Capital Markets Partnership, an American Standards Institute Accredited and Audited Standards Developer.[1]

According to the Construction Marketplace SmartMarket Report, commercial green buildings have demonstrated an 8-9% decrease in operating cost, a 7.5% increase in building value and a 6.6% return on investment improvement.[2] According to the Greening of Corporate America SmartMarket Report, commercial green buildings experience a 3.5% occupancy ratio increase and a 3% rent ratio increase.[3] In a comparison of ENERGY STAR buildings and market comparables in the first quarter of 2008, ENERGY STAR buildings achieved 3.6% higher occupancy rates.[4]

---

[1] Capital Markets Partnership. http://www.capitalmarketspartnership.com/index.aspx?u=Underwriting_Standards (accessed June 20, 2011).
[2] McGraw-Hill Construction. Key Trends in the European and U.S. Construction Marketplace SmartMarket Report, 2008.
[3] McGraw-Hill Construction, Greening of Corporate America SmartMarket Report, 2007.
[4] Miller, Norm, Jay Spivey and Andy Florance. 2008. Does Green Pay Off? http://www.costar.com/uploadedFiles/JOSRE/pdfs/CoStar-JOSRE-Green-Study.pdf (accessed June 10, 2011).

ENERGY STAR qualified homes use substantially less energy for heating, cooling, and water heating, delivering $200 to $400 in annual savings.[5] There are currently over 1 million ENERGY STAR qualified homes in the United States and in 2010, families living in these homes saved more than $270 million on their utility bills.[6]

In addition to offering financial advantages, building green provides environmental and social benefits such as protecting biodiversity and ecosystems, improving air and water quality, reducing waste, conserving natural resources and enhancing occupant comfort and health.

2. What are the major financial benefits for building green for the built environment in the residential, commercial, and industrial sectors?

The greening of the existing built environment can reduce operating and maintenance costs, optimize capital expenditures, increase efficiency, extend the life of buildings and building systems and minimize negative impacts on the environment in terms of energy and water use, consumption of natural resources, and pollution. Lower operating costs and easy maintenance of green buildings can also contribute to lower vacancy rates and higher property values.

Energy consumption represents 30% of a typical commercial office building's operating costs. Energy is the largest controllable cost of operations for commercial buildings and improved energy efficiency has a direct and significant payback for project stakeholders.[7] The US EPA estimates that if the energy efficiency of commercial and industrial buildings improved by 10 percent, Americans would save about $20 billion annually and reduce greenhouse gas emissions equal to the emissions from almost 30 million vehicles.[8]

Residential buildings account for 22 percent of total energy and 74 percent of water consumed in the United States.[9] Green home remodeling can provide a healthier indoor environment, reduce operating costs and reduce negative environmental impacts.[10] By taking advantage of pre-existing water, sewer, and road infrastructure, green home remodeling can increase energy and water conservation, enhance indoor air quality, and reduce material waste and resource consumption.[11]

3. Some industry professionals say that green features add costs to new construction. If that is true, how can those costs be justified?

According to one recent study of more than 150 buildings, green buildings cost roughly 2% more to build than conventional buildings and provide a wide range of financial, health and social benefits. In addition, green buildings reduce energy use by an average of 33%, resulting in significant cost savings.[12] There is no one-size-fits-all answer to the question of how much it costs to build green, but according to a study by David Langdon, it is clear from evidence in the marketplace that reasonable levels of sustainable design can be incorporated into most building types at little or no additional cost.[13]

There are many low cost and no cost green building strategies that can be incorporated into a project and achieved through establishing clear performance goals and implementing an integrated design process. For example building orientation and window placement can facilitate temperature moderation and daylighting. Generally, the earlier green building features are incorporated into the design process, the lower the cost.

---

[5] ENERGY STAR. http://www.energystar.gov/index.cfm?c=new_homes.nh_features (accessed June 5, 2011).
[6] ENERGY STAR. http://www.energystar.gov/index.cfm?c=new_homes.hm_index (accessed June 5, 2011).
[7] ENERGY STAR. Off the Charts. http://www.energystar.gov/index.cfm?c=green_buildings.green_buildings_index (accessed June 5, 2011).
[8] ENERGY STAR. ENERGY STAR Building Upgrade Manual. http://www.energystar.gov/index.cfm?c=business.EPA_BUM_CH1_Intro (accessed June 5, 2011).
[9] Rutgers Center for Green Building. Green Home Remodeling Guidelines, 2009.
[10] USGBC REGREEN Residential Remodeling Guidelines. www.usgbc.org/ShowFile.aspx?DocumentID=3520 (accessed June 8, 2011).
[11] Rutgers Center for Green Building. Green Home Remodeling Guidelines, 2009.
[12] Kats, Greg. Greening Our Built World – Costs, Benefits, and Strategies. http://islandpress.org/bookstore/details4a00.html (accessed June 5, 2011).
[13] David Langdon. What does Green Really Cost? http://www.davislangdon.com/upload/images/publications/USA/Morris%20Article.pdf (accessed June 5, 2011).

The first cost of specific advanced sustainable design elements is often cited as a barrier to green building. One way to overcome this barrier is through employment of life cycle costing analysis when evaluating these features. Life cycle costing analysis on energy-related features can help equip project stakeholders with information to identify the optimal balance between sustainable design and economic efficiency over the lifetime of the project. For example, the Rutgers Center for Green Building conducted a life cycle costing analysis for the NJ Meadowlands Commission Center for Environmental and Science Education, which revealed that daylight sensors were the most cost-effective feature of the project.

Another good analytical technique to employ is eco-efficiency, particularly in selecting green building best practice strategies. Eco-efficiency can be understood as economic-ecological efficiency - a kind of cross-efficiency linking environment with economic issues and measuring the environmental impact added per monetary unit earned (e.g., carbon emissions per $1 of building rent). More generally, eco-efficiency is becoming an important trend in environmental management as a tool for incorporating environmental and economic analysis into an organization's decision-making processes. [14]

4. Some industry professionals also say that retrofitting existing buildings with green features adds costs to the built environment. If that is true, how can those costs be justified?

As noted above, there are many considerations that go into assessing the cost of retrofitting the built environment. Costs come in two forms, so it is important to consider both. The first reflects initial costs of the strategy compared to conventional practices. A second consideration to make is the pay-back period or life-cycle cost. The pay-back costs are less obvious and are often project specific, but they can have significant environmental and economic value that factor into the overall cost.[15]

There are several approaches to minimizing the cost of green project upgrades. For example, the paid-from-savings approach leverages cost savings generated from building system upgrades to pay for a comprehensive greening project within a defined pay-back period. The paid-from-savings approach allows owners to implement needed repairs and upgrades, achieve reductions in energy and water use, and incorporate other green strategies and technologies in the most cost-effective manner.[16]

5. Please explain the key differences in green building standards, such as LEED and Energy Star. Is one better than the other?

ENERGY STAR is a technical assistance and recognition program developed by the US EPA that focuses on improving energy performance in order to reduce greenhouse gas emissions.[17] LEED is a building certification process developed by the US Green Building Council that aims to improve performance across key metrics: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.[18]

Both LEED and ENERGY STAR programs require third-party verification. ENERGY STAR focuses on energy efficiency whereas the LEED system addresses sustainable sites, water efficiency, energy & atmosphere, materials & resources, indoor environmental quality, and innovation. LEED addresses a broader range of high performance building categories so may be considered a more comprehensive approach to green building; however, LEED's point system allows the project team to pick and choose project priorities. Although the LEED system has prerequisites for all categories, a project team may choose not to prioritize energy efficiency, a category recognized by the US EPA as a key element for all green buildings. LEED certification and ENERGY STAR rating can be considered complimentary and the LEED Existing Building program requires buildings to meet specific ENERGY STAR ratings.[19]

Other notable green building performance standards include the American National Standards Institute (ANSI) ICC-700-2008, ASHRAE Standard 189.1, and the International Green Building Code.

---

[14] (Kiechere et al, 2007).
[15] Rutgers Center for Green Building. Green Home Remodeling Guidelines, 2009.
[16] USGBC. Paid-from-Savings guide to Green Existing Buildings http://www.usgbc.org/DisplayPage.aspx?CMSPageID=2204 (accessed June 5, 2011).
[17] ENERGYSTAR.gov. http://www.energystar.gov/index.cfm?c=cbd_guidebook.cbd_guidebook_learn_more_2 (accessed June 5, 2011).
[18] USGBC. What LEED Measures. http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1989 (accessed June 10, 2011).
[19] ENERGYSTAR.gov. http://www.energystar.gov/index.cfm?c=cbd_guidebook.cbd_guidebook_learn_more_2 (accessed June 5, 2011).

6. What are the major trends that you see going forward in the area of green or sustainable building?

- Continued growth in the green building market
- Continued shift in focus from the greening of new construction to the greening of existing buildings
- Shift in thinking from building scale to neighborhood, regional and infrastructural scales.
- Emphasis on data collection, monitoring, post occupancy evaluation and reporting/disclosure about green building performance
- Focus on usability of green buildings by occupants and operators
- More quantitative data available as the implementation phase of major organizational and government plans move forward (AIA 2030 Commitment, PlaNYC, NJ Energy Master Plan)
- Continued increase in demand and availability of and access to sustainable materials
- Increase of voluntary and regulatory green building programs/incentives

7. Tell us about the Green Building Center at Rutgers. What is its mission, and what are the types of major projects in which it is involved?

The Rutgers Center for Green Building conducts applied research utilizing planned and existing green building projects, works with industry and government to promote these concepts, and develops undergraduate, graduate and professional education programs. The Center's mission is to promote green building through research, education and training, and partnerships with industry, government and not-for-profit agencies.

We started with a seed grant from Rutgers University intended to facilitate inter-departmental/disciplinary work. Today, the Center employs engineers, architects, planners, environmental psychologists, environmental scientists with various specialties (air quality, water, energy, solid waste). We hold research grants from federal agencies such as NSF, DOE and HUD and also conduct projects for the State of NJ and private sector real estate companies and related not-for-profit organizations.

More information is available on our website: http://greenbuilding.rutgers.edu